

ABSTRACT

Techniques are disclosed for incrementally rendering content in a content framework (such as a portal page provided by a portal system). Upon receiving a request for a portal page, a portal server immediately returns a response including the results from portlets which have acquired their content. If some portlets have not yet finished, subsequent content is delivered at a later time through use of one of several alternative programmatically-generated mechanisms.

Capabilities of existing browsers are leveraged for several embodiments, including use of refresh headers, multipart MIME ("Multi-purpose Internet Mail Extensions") types, and portal pages structured using frames.

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